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ARTICLE XXII.

*Description of an extinct species of American Lion: FELIS ATROX. By Joseph Leidy, M. D.
Read May 7, 1852.*

Corresponding in some degree to the relative number in which Carnivora now exist, contrasted with Ungulata, remains of extinct species of the former are rare in their occurrence compared with the abundance in which similar remains of the latter are found.

Until recently no extinct representative of the genus *Felis* had been discovered in North America, but the especial subject of this communication indicates the former existence of a species which much surpassed in size the recent Tiger and Lion, or the extinct *Felis spelæa* of Europe.

The species is established upon the left portion of a lower jaw containing the three molars almost perfect, and the canine much broken (Pl. 34.) The osseous portion of the jaw is very friable, and has a thick envelope of compact peroxide of iron, from which the teeth protrude. Internal to the molars a layer of the latter substance stands up and is impressed upon its other face by a broad bone, which had been in contact.

The specimen belongs to this society, and when first observed was in company with several fragments of bones and a few teeth of other extinct mammalia, without labels, but from the condition of their preservation corresponding closely to that of some specimens, in several instances of the same animals, contained in the collection of the Academy of Natural Sciences, from ravines in the neighbourhood of Natchez, Mississippi, I have no doubt they were derived from the same locality, and probably constitute the donation entered upon the minutes of the Society, April 1st, 1836, of some fossil remains from the vicinity of Natchez, presented by William Henry Huntington, Esq.

Most of the mammalian remains found at Natchez are impregnated with oxide of iron, or are very friable, and enveloped in thick layers of this material very compact in character, or frequently in the case of the teeth have large nodules of the same substance attached, usually to the extremities.

The specimens in the collection of Mr. Huntington, accompanying the fragment of lower jaw, are as follow:—

1. A fragment of the lower jaw of the Mastodon.
2. Two isolated upper molars and an inferior last molar of a large species of Bison.
3. An upper and a lower molar of *Equus Americanus*, *Leidy*. The latter, with some small fragments of the lower jaw, adhere to a thick layer of oxide of iron impressed with the marks of three other molars.
4. Several fragments of bones more or less enveloped in oxide of iron, and not characteristic.

The collection of remains obtained by Dr. Dickeson at Natchez, preserved in the cabinet of the Academy, belong to the genera *Megalonyx*, *Myiodon*, *Bison*, *Cervus*, *Equus*, *Mastodon*, and *Ursus*.

From the associated remains found in this locality, the extinct species of *Felis*, indicated by the portion of lower jaw, which I propose to designate as the American Lion or *Felis atrox*, was cotemporary with the *Mastodon*, *Megalonyx*, *Myiodon*, *Bison*, *Cervus*, *Equus*, and *Ursus*.

The exact outline of the jaw in the specimen is difficult to ascertain, from its thick ferruginous coating, but from several exposed points of the body along its base it appears to have been a little convex downwards, as is frequently the case in the Lion. The symphysis rises in the gradual convex manner more usual in the latter than in the Tiger. The hiatus anterior to the molars is long, in correspondence with the size of the animal, but as in the Lion it rises relatively higher in its advance to the canine alveolus than is commonly the case in the Tiger.

No remains of the incisors exist in the fossil. The canine tooth is much mutilated; the summit and back part of the crown, and a layer from the fang being broken away. It appears originally to have been about six inches in length at its anterior convexity, and about fifteen lines in its antero-posterior diameter, and ten in its transverse diameter, at the enamel border of the crown. Its form also appears to have been closely what it is in the recent Lion and Tiger. Upon the inner side of the crown a portion of the characteristic longitudinal ridge exists, which is more prominent at its expanded base than in the animals last mentioned.

The crowns of the molars externally at their base are not so prominent as in the Lion, Tiger, and *Felis spelæa*, and appear in consequence more vertical and less convex.

The form of the carnassial tooth is very nearly the same as in all species of *Felis*. The obliquity of the cutting edges and the fissure separating them correspond pretty closely to the Tiger. The posterior lobe is one-fifth greater in its antero-posterior diameter than the anterior lobe, and it is strongly and evenly convex postero-externally. The point of the anterior lobe does not rise so abruptly or prominently as in the Tiger, or *Felis spelæa*, as represented in Cuvier's figure 7, plate 194, of the 4th edition of the *Ossements Fossiles*, and its base externally presents a slight salient line or ridge.

The second molar tooth is relatively much greater in its antero-posterior diameter contrasted with its length, than in the Lion, Tiger, or *Felis spelæa*. The middle lobe of the crown is compressed conoidal, with a salient edge, and measures $6\frac{3}{4}$ lines at its base externally between the depressions separating it from the anterior and posterior tubercles.

The anterior tubercle is very much broader than in *Felis spelæa*, and resembles more in its form that of the Tiger; its salient edge being antero-posteriorly convex. The posterior tubercle rises very slightly higher than the anterior, and its antero-posteriorly convex margin descends to the outer side of the posterior heel of the tooth. The base of the crown presents a slight crescentic, roughened, salient line or ridge antero- and postero-externally.

The first molar also, as in the case of the tooth last described, is relatively greater in the antero-posterior diameter of the crown, compared with the length, than in the Tiger. The middle conoidal lobe slopes off gradually antero-externally to the base of the anterior prominent convexity of the crown, and its trenchant margin descends in a crescentic line forwards and inwards. The posterior tubercle is large and distinct, and its bottom postero-externally presents a quite salient basal ridge.

Admeasurements of the fragment of lower jaw of Felis atrox, in comparison with F. leo, F. tigris, and F. spelæa.

	F. leo.*	F. tigris.†	F. spelæa.‡	F. atrox.
Depth of lower jaw below the carnassial tooth, .	20	20	20	27 lines.
Depth below the first molar,	20	20	18	26 "
Length from the posterior part of the carnassial tooth to the front of the canine,	55	58	55§	77 "
Length of the molar series,	33	32½	38	41 "
Extent of hiatus anterior to the molars, . . .	13	14	13	20 "
Antero-posterior diameter of first molar, . . .	8¼	8½	8½	10 "
do do second do	12	12	13	15 "
do do third do	12	13½	14	15 "

* Measurements taken from a Lioness.

† Measurements taken from a very large specimen, from India, preserved in the Cabinet of the Academy of Natural Sciences.

‡ Cuvier: *Ossemens Fossiles*, ed. 4, t. 7, p. 452.

§ Ibid. Pl. 194, Fig. 7.

REFERENCES TO PLATE 34.

Figures the size of nature.

Fig. 1 represents the left side of the lower jaw of *Felis atrox*; the osseous portion entirely concealed by a thick envelope of oxide of iron, from which the teeth protrude.

Fig. 2.—Outer view of the canine tooth, removed from its socket.